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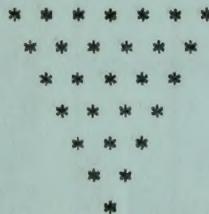
SNOW SURVEYS AND IRRIGATION WATER FORECASTS

U. S. DEPARTMENT OF AGRICULTURE

for the

RIO GRANDE DRAINAGE BASIN

May 1, 1943



Issued by the
United States Department of Agriculture
Soil Conservation Service
Division of Irrigation
In Cooperation with
The Colorado Agricultural Experiment Station
Colorado State College
Fort Collins, Colorado

May 10, 1943

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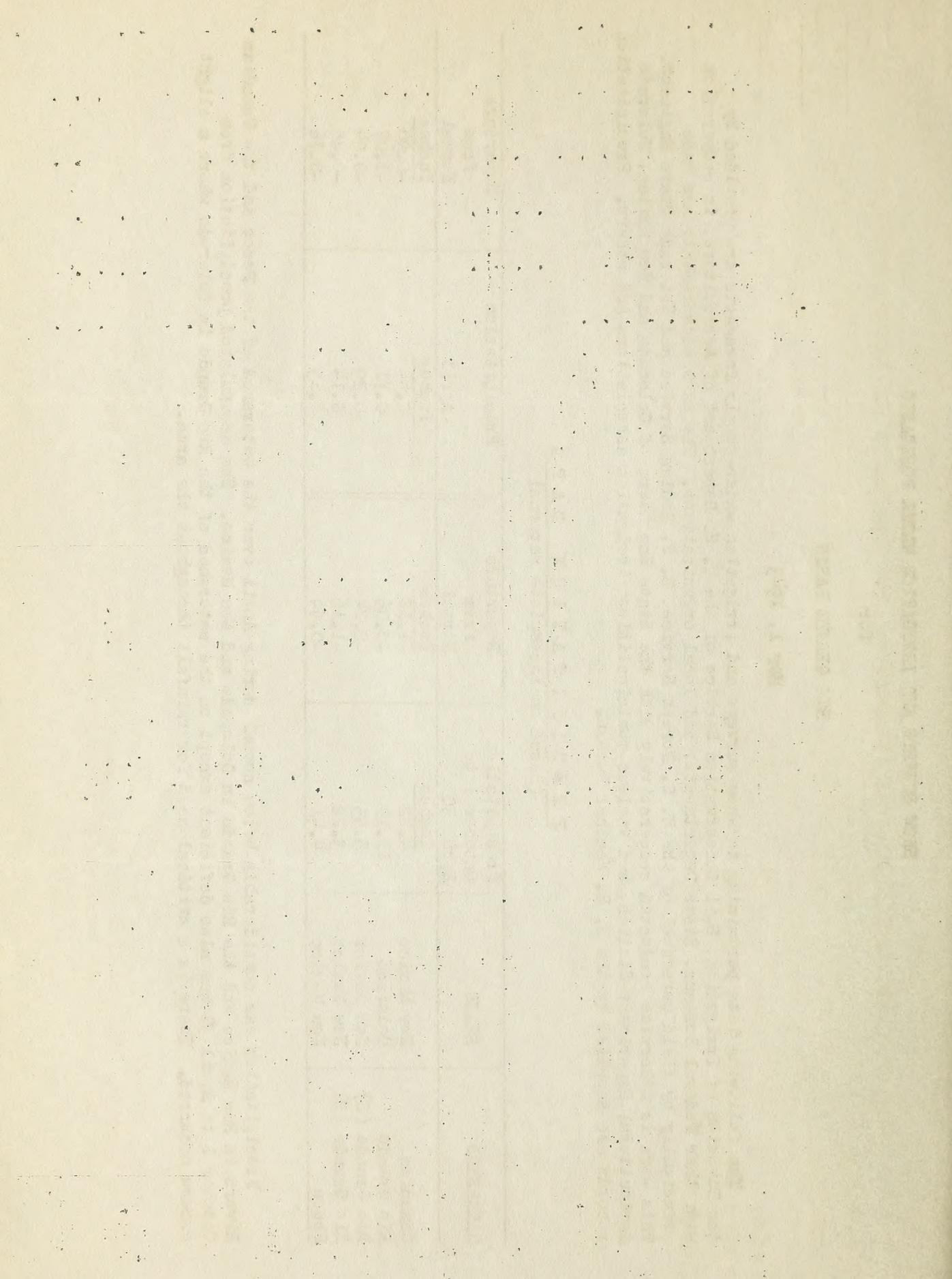
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The following data pertaining to snow surveys and irrigation water-supply forecasts are provided by the Division of Irrigation, Soil Conservation Service of the U. S. Department of Agriculture, in cooperation with other Federal Bureaus, State Departments, and local organizations. The snow measurements are made principally by field personnel of the U. S. Forest Service, U. S. Indian Service and Colorado State Engineer. This work is otherwise conducted cooperatively with the State Engineers of Colorado and New Mexico, Colorado Agricultural Experiment Station, and various municipalities, irrigation associations and others. Precipitation records are supplied by the U. S. Weather Bureau.

P R E C I P I T A T I O N D A T A
 (Based on incomplete returns)

WATERSHED	STATE	Precipitation		Departure		Precipitation		Departure	
		October 1 to April 30	Inches	Normal	Inches	April	Normal	Inches	Normal
Canadian	New Mexico	4.22		-1.18	0.44			-0.90	
Rio Grande	Colorado	11.10		+0.06	0.71			-1.07	
Rio Grande (N)	New Mexico	5.55		-2.24	0.29			-0.94	
Rio Grande (S)	New Mexico	3.28		-1.16	0.14			-0.45	
Pecos	New Mexico	4.41		-0.99	0.19			-0.76	

Precipitation was considerably below normal during April over the watershed of the Pecos and the Canadian Rivers in New Mexico and the Rio Grande in Colorado and New Mexico. The accumulated precipitation from October 1 to April 30 was also deficient except on the watershed of the Rio Grande in Colorado where a slight excess occurred. There is a critical need for rainfall throughout the area.



SUMMARY OF MAY 1 SNOW SURVEYS AND COMPARISON OF DATA WITH THAT OF PREVIOUS YEARS BY WATERSHEDS

WATERSHEDS	Snow Depth				Water Content		Number Courses in Average	Snow Density		1943 Water Content in percent of	
	Seven year Avg.*	1942	1943	Seven year Avg.*	1943	1942		1943	1942	1943	1942
Rio Grande	In.	In.	In.	In.	In.	In.	13.1	41	38	43	—
Canadian River	23.8	34.6	11.3	9.8	—	—	—	—	—	—	37

* Some for shorter periods

WATER SUPPLY OUTLOOK

Rio Grande. The May first snow surveys show an average water content of only one-third of that of a year ago on the headwaters of the Rio Grande in Colorado and but one-half of the past seven year average. Because of the exceptionally deficient April precipitation throughout the Rio Grande drainage, together with above normal temperatures, many of the snow courses which under usual weather conditions would have had measurable depths of snow on the first of May are now bare. During the month the water content of the snow pack on Wolf Creek Pass was reduced by about 15 inches through melting and evaporation, at Cumbres Pass about 12 inches and at Summitville, elevation 11,500 feet, 4 inches. The early snow melt has resulted in above-normal run-off in the upper reaches of the main river and its tributaries.

On the Rio Grande, in northern New Mexico, the April first water content of the snow has for a number of years averaged about 6 inches, but because of the combination of subnormal precipitation and melting temperatures the snow cover throughout this area was substantially depleted during the past month except for a few remaining drifts which are quite negligible as a factor affecting the final run-off from this section of the watershed.

The present outlook for the coming season's irrigation water supply, as based on the snow cover on this drainage, is less favorable than it was a month ago. Reservoir storage in the San Luis Valley has not kept pace with the season due largely to an early demand for direct irrigation water urgently needed in supplementing the soil moisture over the cultivated areas of the valley. It is expected that the final limit of storage this season will somewhat exceed the present level but will not reach last year's fillings. The peak run-off will be early this season. The snow cover at the high elevations is comparatively good at this time, a condition which should maintain the river at a fair stage well into the summer. Range conditions are fair to poor over the entire drainage area.

Storage in the Elephant Butte and Caballo reservoirs now totals nearly 1,900,000 acre-feet or about 75 percent of capacity. El Vado Reservoir on the Chama held 127,000 acre-feet on May first, an accumulation of 70,000 during April, and now is nearly 60 percent of capacity.

Canadian and Pecos Rivers. For these drainage areas the run-off from snow cover will be much below normal. However summer flood flows may add materially to the water supply. The present storage in the Conchas Reservoir is 390,000 acre-feet or two-thirds capacity. Soil moisture conditions are poor over the Canadian drainage and because of deficient rainfall the range conditions are also poor. For the Carlsbad area on the Pecos the storage in the principal reservoirs is about two-thirds of that of a year ago and also approximately two-third capacity. Soil moisture conditions are poor and the range dry.

Groundwater. During 1942 the water levels rose in the Roswell Artesian Basin of the Pecos Valley except in the irrigated area where there was a drop of 4 or 5 feet. Shallow water levels fell in the heavily pumped area of the basin, falls of nearly 8 feet occurring in some wells. Changes in the water levels in the House Area on the Canadian vary from a fall of one foot in the trough of the valley to a rise of one foot in the wells farthest from the river. Water levels fell from 1 to 4 feet in Portales Valley and a similar drop occurred in the irrigated area of Mimbres Valley. There was little change in Estancia Valley and Mesilla Valley. In the San Luis Valley surface water levels are reported to be higher than usual.

RIO GRANDE WATERSHED

Summary of Federal and State Cooperative Snow Surveys
Issued May 10, 1943, at Fort Collins, Colorado.

Main Drainage and Snow Course	Local Drainage	Location	Descrip- tion	Elev. National Forest				May 1 Snow Cover Measurements			
				Av. @ 1942	1943	Av. @ 1942	1943	Av. @ 1942	1943	Av. @ 1942	1943
RIO GRANDE											
26	Wolf Creek Pass	South Fork	Colo. Wolf Cr. Pass	4-37N-2E	10000	Rio Grande	57.3	30.6	26.0	In.	In.
27	Upper Rio Grande	Rio Grande	" Rio Grande Res.	13-40N-4W	9350	"	4.3	0.0	1.3	32.9	14.9
47	Silver Lakes	Alamosa R.	1 mi. S. Silver L.	15-36N-5E	9600	"	3.3	2.8	0.0	0.0	0.0
49	River Springs	Conejos R.	10 mi. W. Mogote	25-33N-6E	9300	"	3.1	1.3	0.0	0.5	0.0
74	LaVeta Pass #2	SanCristoCr	LaVeta Pass	22-28S-70W	9300	SanCristoGr	8.6	29.0	0.0	0.4	0.0
76	Summitville	Wightman Cr.	" Summitville	30-37N-4E	11500	Rio Grande	62.9	39.8	22.7	11.3	0.0
77	Cumbres Pass #2	Los Pinos R.	Cumbres Pass	17-32N-5E	10000	"	41.4	61.4	31.7	29.2	14.8
80	Santa Maria	N. Clear Cr.	Santa Maria Res.	8-41N-2W	9700	"	3.3	0.0	0.0	20.3	24.6
82	Culebra	Culebra R.	12 mi. E. San Luis	37-2N105-2W	10000	SanCristoGr	30.0	51.0	0.0	1.5	14.7
84	Fort Garland	Big Ute Cr.	6 mi. N. Ft. Garland	13-29N-72W	8200	"	"	0.0	0.0	11.2	0.0
1	Red River	Red River	6 mi. SE. Red River	29-28N-15E	8200	Carson	"	"	"	19.2	---
2	Taos Canyon	Rio de Taos	14 mi. E. Taos	10-25N-15E	9000	"	26.4	"	"	8.6	---
4	Aspen Grove	Rio En Medio	10 mi. NE. Santa Fe	12-18N-10E	9100	Santa Fe	"	"	"	---	---
5	Lee Ranch	Jemez Cr.	5 mi. NW. Bland	3-18N-4E	9050	"	"	"	"	---	---
6	Canjilon	Canjilon Cr.	8 mi. NE. Canjilon	4-26N-6E	9500	Carson	"	45.9	21.7	---	---
7	Rio Nutrias	Rio Nutrias	10 mi. SE. ParkView	6-27N-5E	7900	"	"	"	"	---	---
8	Panchuela	Panchuela Cr.	1 mi. N. Cowles	34-19N-12E	8500	Santa Fe	"	"	"	---	---
9	Hematite Park*	Red River	3 mi. SE. Red R.	8-28N-15E	9500	Carson	"	"	"	---	---
12	Tres Ritos	Agua Piedra	7 mi. W. Holman	23-22N-13E	9000	"	"	"	"	---	---
15	Pay Role	Rock Creek	4 mi. SE. Hopewell	16-28N-7E	10000	Jicarilla R.	"	"	"	---	---
16	Jicarilla	Rock Lake Cr.	15 mi. S. Dulce	9-29N-1W	8500	Off Forest	"	"	"	---	---
17	Chama Divide	Willow Creek	6 mi. W. Chama	36.9N-106.7W	7750	"	"	"	"	---	---
18	Chamita	Chamita Cr.	6 mi. NW. Chama	36.9N-106.7W	8500	Average for Drainage	"	"	"	---	---
					23.8	34.6	11.3	9.8	13.1	4.9	
CANADIAN											
9	Hematite Park	Moreno Creek	N. Mex. 3 mi. SE. Red R.	8-28N-15E	9500	Carson	"	"	"	---	---
10	Ocate Mesa	Ocate Creek	" 3 mi. E. Black L.	25-24N-16E	9200	Off Forest	"	"	"	---	---
						Average for Drainage					

*On adjacent drainage
@Average for period of record

RESERVOIR STORAGE

Reservoir Storage in Thousands of Acre-Feet, Rio Grande Drainage, as of May 1, for the Years 1934-1943, inclusive. (Based on data from the State Engineer of Colorado, U. S. Bureau of Reclamation and other sources.)

Reclamation and other agencies).

A = Percentage of capacity.
B = Percentage of 10-year average.
C = Percentage of filling
beforecast for 1943.

Reservoir	Capacity Ac-ft.	DRAINAGE						10-YR. AV G.P.						A %	B %	C %	
		1934	1935	1936	1937	1938	1939	1940	1941	1942	1943	1944	1945				
RIO GRANDE																	
Rio Grande	45.8	4.9	0.3	23.6	16.2	17.5	36.7	4.7	8.4	49.1	7.8	16.9	17	46	20		
Santa Maria	45.0	6.8	4.6	6.9	9.5	10.8	15.1	3.8	4.6	26.9	15.4	10.4	34	148	40		
Sanchez	25.9	12.0	7.4	13.8	17.6	19.2	22.9	10.9	8.6	37.9	35.0	18.5	135	189	100		
Terrace	17.7	1.4	1.3	6.4	4.5	9.6	7.5	1.7	3.8	9.1	1.3	4.7	7	28	30		
Continental	26.7	2.6	0.8	3.3	0.5	4.0	4.3	1.0	5.0	10.0	16.2	4.3	61	377	65		
Elephant																	
Butte	2273.7	1001.6*	488.0*	782.5	917.1	1099.0	1324.0	803.2	598.5	2126.0	1653.1	1079.3	73	153	80		
Caballo	365.0	--	--	--	0.0	14.5	44.5	17.3	67.8	263.1	238.3	107.6	65	222	80		
El Vado	226.0	--	--	--	--	148.6	87.4	113.7	129.8	155.5	127.0	127.0	56	100	70		
CANADIAN																	
DRAINAGE																	
Conchas	600.0	--	--	--	--	--	--	80.6	155.5	390.6	390.3	254.2	65	153	65		
PECOS																	
DRAINAGE																	
Alamogordo	148.0	--	--	--	--	--	--	11.2	95.6	50.2	41.4	129.8	89.4	69.6	60	128	
McMillan	0.4	9.2	2.8	11.0	13.3	14.7	15.6	9.8	35.9	30.8	20.3	15.5	63	131			
Avalon	0.4	1.8	3.4	1.9	1.9	1.8	3.0	0.8	4.7	5.1	0.8	2.4	9	33			

Some averages for shorter periods.

*Based on capacity of 2,407,100 acre-feet.

